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Future demands for services from public health facilities in Uttar Pradesh

Population Council




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Shaping Demand and Practices to Improve Family Health Outcomes in Northern India

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Background

The population of Uttar Pradesh (UP) has been growing at annual exponential rate of 2.3 percent during 1991-2001 and its population is expected to reach 249 million by 2026 from 166 million in 2001. The total fertility rate in UP was 3.8 children per woman in 2008 with a decline of about one child in the last ten years. In terms of utilization of maternal and child care services, UP is far behind many other states; even after the introduction of Janani Suraksha Yojana (JSY), coverage of institutional delivery, immunization, ANC and PNC has been substantially low. The maternal mortality rate in UP (440)[1] is amongst the highest in the country and in view of the progress made in the last 10 years, the state may not be able to achieve the Millennium Development Goals (MDGs) by 2015. Moreover, the achievement of the MDGs at the national level would largely depend on the progress made in states like UP, Bihar, Rajasthan and Madhya Pradesh.

Despite the high unmet need for contraception, utilization of modern contraceptives has been very low and an increasing number of people have been relying on traditional methods (12-15 percent currently, predominantly the rhythm method, as compared to less than 2 percent in the early 1990s).

In the context of increasing inputs under the National Rural Health Mission (NRHM), and the proposed behavior change communication (BCC) activities, in 2010, the International Institute for Population Sciences (IIPS), a partner in the Population Council-led consortium, conducted a study to assess (a) the expected increase in workload of public health facilities till 2015, and (b) the extent to which this demand could be met by the existing health facilities. The study was funded by the Population Council as a subcontract to IIPS from an award granted by the Bill and Melinda Gates Foundation.

Methodology

Projecting future demand for various services is one of the tools to estimate required investment. One method is to define the goals of the program for the next 5-10 years and accordingly estimate the demand for services. Based on these estimates, resources are allocated to ensure that all essential requirements—physical infrastructure, human resources, supply of essential drugs and vaccines and quality of care—are in place. The second approach, which has been adopted in this study, is to examine the past trend in the utilization of services and extrapolate the expected level of coverage over the next 5 or more years. To predict the demand for particular services indicators that will increase the load on physical and human resources and have a bearing on quality of care have been selected. These indicators are institutional delivery, IFA and TT coverage, contraceptive use (limiting and spacing) and immunization coverage. Further, the expected increase in demand has been segmented into the public and private sector. However, in this study we have primarily focused on the workload of the public sector. The data on utilization of selected services are taken from NFHS, DLHS and a survey conducted in UP by the Population Council in October 2009.

Key findings

Institutional delivery: Table 1 gives the number of institutional deliveries estimated to take place in UP[2]. Before the NRHM was launched, around 1,150,000 deliveries were taking place in institutions. It is projected that by 2010 this number will increase to 2,525,000 and by 2015 to 3,900,000. This is encouraging as by 2015 it is expected that 69 percent of all deliveries in UP will be conducted in institutions.

[1]RGI. 2009. *Special Bulletin on Maternal Mortality in India 2004-06.* Sample Registration System, Office of the Registrar General of India. New Delhi. <http://d.yimg.com/kq/groups/18156219/1486313256/ name/Bulletin>.
[2]F. Ram. 2010. "Future Demand for Services from Public Health Facilities in Uttar Pradesh," in M.E. Khan, Gary Darmstadt, T. Usha Kiran and D. Ganju, eds. *Shaping Demand and Practices to Improve Family Health Outcomes: A Formative Study in Rural Uttar Pradesh.* New Delhi: Population Council (forthcoming).

To estimate the future demand for services, it is assumed that the share of public and private facility use will be 50: 50. Further, we expect that during 2004-15, the crude birth rate will go down from about 31 to 26 per 1,000 population. However, due to population momentum, the number of births would still increase marginally from 5,500,000 to 5,600,000 in 2015. Are our facilities ready to handle this increase in delivery cases?

Table 1: Number of births and institutional deliveries, UP, 2008-15

Year	Number of births	Number of institutional deliveries
2008	5,494,156	1,873,507
2009	5,590,134	2,476,429
2010	5,606,354	2,524,485
2011	5,619,036	2,796,701
2012	5,628,672	3,068,460
2013	5,635,482	3,339,457
2014	5,638,955	3,608,965
2015	5,638,689	3,876,232

UP has 20,521 sub-centers (SCs), 3,660 primary health centers (PHCs), 386 community health centers (CHCs), 50 sub-district facilities and 74 district hospitals (DHs). According to DLHS-3, out of around 1,200,000 deliveries in 2007, 40 percent (around 500,000) were managed by the existing public health facilities. After the introduction of the JSY, an increasing number of deliveries are shifting to public health facilities. A 10 percent point increase in the use of public health facilities has been assumed, thus increasing the percentage of institutional deliveries in public facilities to 50 percent. Assuming that in UP only DHs (74) and CHCs/First Referral Units (FRUs; 436 taken together) are conducting deliveries, on an average of 10 deliveries per day and 3 deliveries per day, respectively, potentially about 750,000 deliveries can be conducted in a year. Further, according to DLHS-3, around 32 percent of PHCs had conducted at least 10 deliveries in the last month, which is on average around 150,000 deliveries annually. Thus all these facilities together have the potential to conduct 900,000 deliveries. According to the UP government website, 964,376 institutional deliveries in 2007-08 were covered by the JSY, that is, in public health facilities[3]. This figure corresponds with the existing capacity of the facilities discussed above.

In 2015, out of 3,900,000 total institutional deliveries, based on the projection that the share of public-private sector use will be 50:50, almost 1,900,000 deliveries are expected to take place in public health facilities. This amounts to 10 deliveries per day per facility, taking 510 CHCs, FRUs and DHs together. As discussed earlier, 120 deliveries per year are being conducted by existing PHCs. If we assume that each PHC will attend three times more delivery cases per year (i.e., 360 per year), all functioning PHCs taken together will conduct 421,560 deliveries. As a result, the workload of the 570 CHCs, FRUs and DHs may reduce from 10 to 7 deliveries per day. Given the present number of deliveries that all these facilities are conducting, it would be difficult for these facilities to meet the demand of even 50 percent of women who may opt for a delivery at a public facility.

Key factors that constrain public facilities from functioning at optimum capacity include the huge shortfall of human resources at the CHC level[4]. Though nearly 89 percent of CHCs have functional operation theatres (OTs), there is a shortfall of physicians (68 percent), surgeons (60 percent), anesthetists (84 percent) and pediatricians (97 percent). CHCs and DHs are expected to handle complicated cases in addition to normal deliveries in their catchment area; however, due to limited human resources, cases are probably being concentrated either in DHs or a few functioning CHCs, resulting in heavy workload and deteriorating quality of care.

Moreover, PHCs that should be managing normal deliveries and other basic services are not adequately equipped. Nearly half the PHCs have less than 4 beds, less than 1 in 2 PHCs has a functional OT and 55 percent have essential drugs. Very few PHCs have a regular supply of electricity (12 percent) and only 1 in 5 PHCs has cold chain equipment (DLHS-3). Just around 1 in 3 PHCs has a referral system for delivery. Monitoring by civil society, which the Ministry of Health and Family Welfare plans to implement at the district and PHC level, is lagging; only 2 in 5 PHCs have a *Rogi Kalyan Samiti* in place, which are in fact not functioning efficiently.

Given the limited preparedness of PHCs and CHCs, it would be difficult for them to meet the growing demand for institutional delivery due to the JSY. These findings point to the urgent need to strengthen health facilities, and locate them across the districts, so as to evenly distribute the case load and ensure quality of care.

IFA and TT coverage: IFA and TT, the two indicators considered in this study, are basic components of ANC and help to reduce maternal and child mortality. The distribution and consumption of 100 IFA tablets during pregnancy is the only intervention to reduce the risk of maternal anemia. To increase the consumption of IFA, a strong BCC strategy is needed. The projected requirement of TT has been calculated by multiplying the projected percentage of women getting at least two TTs by the number of pregnant women and two.

In UP, TT and IFA coverage will be 84 and 73 percent respectively, by 2015. In other words, the supply of TT

[3]http://www.planning.up.nic.in/Presentation%20in%20the%20Planning%20commission%20Meeting
[4]MOHFW. 2008. Bulletin on Rural Health Statistics in India, 2007. http://nrhm-mis.nic.in/Publications.aspx

would need to increase from about 7.6 million to 10.4 million and the supply of IFA from 316 million tablets to 453 million tablets (Table 2).

Table 2: Number of IFA tablets and TTs required in UP, 2008-15

Year	No. of TT ('000)	No. of IFA('000)
2008	7,620	315,798
2009	8,119	339,496
2010	8,510	358,715
2011	8,898	377,802
2012	9,282	396,756
2013	9,663	415,565
2014	10,039	434,161
2015	10,408	452,480

Contraceptive use: In the case of family planning, the estimate of unmet need can be used to project the demand. According to DLHS-3, unmet need in UP is 32.5 percent (10.7 percent for spacing and 21.8 percent for limiting). If unmet need is converted into met need by improving access and addressing some of the barriers to contraception, one could assume that the contraceptive prevalence rate in UP could go up to around 60 percent. Some unmet need (5-7 percent) would always remain at any point of time. Those who have an unmet need for limiting need to be assisted and their concerns must be addressed on priority. One of the key barriers is the lack of trained personnel who can conduct sterilizations at appropriate facilities. Key barriers to adopting modern non-terminal methods include method-specific concerns (61 percent) followed by lack of knowledge of methods and family-related issues (26 percent) such as opposition from the husband , mother-in-law, young women's restricted mobility and religious beliefs. With increased BCC efforts to address these issues, the demand for contraceptive methods in UP may increase manyfold.

Based on time series data from NFHS-1, NFHS-2 and NFHS-3 on the adoption of permanent and non-permanent method separately, a projection has been made for the future requirement of contraceptive methods. DLHS-3 estimates for the use of non-permanent methods were lower than NFHS -3 estimates and hence have not been considered. This may result in a slight overestimation of contraceptive use. When we consider DLHS-3 data also in the estimation procedure, the future estimate would be lower by 3 percent points. Our estimate shows that modern contraceptives use will increase to 36 percent in 2015.

As per our estimates, around 5,700,000 couples might have accepted sterilization in 2008. However, according to service statistics for UP, during 2008-2010 on an average 450,000 sterilization are being done annually. These statistics may not be capturing cases from the private sector, ranging from 15-20 percent of overall sterilization cases. According to the present exercise, the number of sterilization cases would increase to 7,160,000 by 2015, or an additional 150,000 net users. Unless sterilization facilities are improved, meeting the demand for this additional workload will not be easy. There are almost 4,000,000 users of non-permanent methods, which will increase to 5,000,000 users by 2012 and to 5,800,000 by 2015 (Table 3). These users are essentially market dependent, but the public sector would need to strengthen its regulatory system to maintain access and the quality of services. Social marketing also needs to be strengthened to ensure equity. Further, 14-15 percent of users depend on traditional methods, and the use of postpartum contraception among low parity women is currently very poor. If these two population segments shift to modern spacing methods because of increased BCC efforts and greater contact with health workers due to the phenomenal increase in institutional delivery, there would be a huge demand for methods like pills and condoms. As a result, maintaining and managing the supply chain would be a challenging task.

Table 3: Users of modern contraceptives in UP, 2008-15

Year	Users of permanent methods	Users of modern spacing methods
2008	5,715,225	4,037,829
2009	5,913,011	4,272,803
2010	6,114,146	4,513,571
2011	6,317,872	4,759,562
2012	6,524,923	5,011,308
2013	6,735,496	5,268,961
2014	6,948,805	5,531,906
2015	7,164,623	5,799,933

Immunization coverage: DLHS-3 data indicate that in UP, full immunization coverage is around 30 percent whereas measles coverage is around 47 percent. Our extrapolation using time series data indicates that by 2015 full immunization coverage will increase to around 73 percent and measles coverage to 75 percent. Based on the expected number of births, and excluding infant deaths, it is estimated that around 5,300,000-5,400,000 children would need to be vaccinated annually. In other words, in 2015, 4,000,000 measles vaccines would be required as compared to 2,000,000 being used currently.

This increase in case load would need to be managed by approximately 20,521 SCs and 3,360 PHCs. As mentioned earlier, PHCs are not equipped to manage this increased demand. The numbers suggest that each SC has been covering 100 children annually (assuming all cases are managed/vaccinated by them as the share of the private sector is small and focused in urban areas), which would increase to 200 children in 2015. Given their current level of preparedness, the increased case load may be too much to handle, considering their other responsibilities.

Of the total SCs surveyed in DLHS-3, only 35 percent had essential supplies (i.e., IFA, vaccines, Vitamin A, ORS); among SCs located in government buildings (which is only 42 percent of all SCs), only 7 percent had a regular supply of electricity. Little more than half the ANMs are residing in SC quarters or within 1 km of the village; with the presence of ASHAs, it is not important for the ANM to stay in the village for educational purposes. Good road connectivity, transport facilities and communication links, like mobile/telephones/ helplines, are necessary to manage any emergency cases. DLHS-3 data indicate that only 18 percent of PHC had a functioning vehicle.

Implications for policy and the BCC strategy

The projected requirement of various services indicates that there will be a huge pressure on public facilities in the future, particularly in view of the shortage of human resources at the PHCs and CHCs/FRUs. Unless strategic planning is done to ensure that facilities are adequately equipped as per norms (including human resources, infrastructure as well as supplies) and are easily accessible (located within a radius of 5-8 km), it would be difficult to handle the workload without compromising the quality of care.

Moreover, there is an urgent need to ensure a regular supply of electricity to all functional PHCs. In the absence of such services, working hours get restricted even in 24x7 health facilities. In addition, both providers and clients may want to leave the facility before dark. Efforts are needed to spread functioning health facilities across districts to reduce the workload of the few functioning facilities.

Attempts should be made to curb the trend of people shifting from the private sector to the public sector for institutional delivery due to JSY scheme by extending the JSY incentive to accredited private clinics as well. Given that the increasing volume of service requirements cannot be managed by the public sector alone, PPP models could be tested and successful ones could be scaled up.

Addressing fertility desires and promoting spacing between births needs attention both to reduce unwanted pregnancy and the unmet need for spacing. Increasing awareness of emergency contraceptives would be an important step to avoid both unwanted pregnancies and induced abortions. It is estimated that in just five years more than150,000 maternal deaths would be averted by increasing contraception rates to meet women's need for spacing and limiting[5].

The data indicate that a large number of people depend on traditional contraceptive methods to regulate fertility, and this practice has been rapidly increasing. This could be largely because of system failure or program emphasis on sterilization as there is no reason to believe in increased choice for traditional methods overnight. To reduce unwanted pregnancies, programs need to look into supply and access issues. If traditional methods are preferred then the standard days method should be promoted as, if used correctly, this method could be more reliable than other traditional methods.

To realize these projections, BCC efforts should create demand for services and address perceptions that it is "not necessary" to access health care services. BCC must play a greater role in motivating women to move to facilities not just for institutional delivery but for other services as well. BCC can also a play role in improving demand for contraceptives and educating people to make choices appropriate to their needs.

[5]S.J. Goldie et al. 2010. "Alternative Strategies to Reduce Maternal Mortality in India: A Cost Effectiveness Analysis," *Plos Medicine*, 7(4).

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